



Figure 1: (a) With different  $\beta$  in DPO and SimPO, KL divergence from the policy model to the reference model on winning responses. (b) AlpacaEval2 LC win rate of DPO and SimPO with different  $\beta$ . With proper hyperparameters, SimPO can result in a similar KL divergence to DPO under its optimal  $\beta = 0.01$ . Increasing  $\beta$  for DPO (e.g.,  $\beta = 0.1$ ) reduces KL divergence but also overly constrains training.

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**Input** →

Q: Convert natural language into a list of turn-by-turn directions.  
Go west on I-10 until you hit the 101 then take it north. You will eventually see the Hollywood sign.

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**DPO** →

1. Merge onto Interstate 10 westbound, heading straight if traveling northwise, maintaining awareness for fast lane position for an extended journey along I-10.
  2. Continue driving west on I-10 without deviation, adhering to traffic regulations and speed limits, focusing on maintaining smooth progress through urban areas and open countryside alike.
  3. Approximately 15 miles past downtown Los Angeles or after passing exit 9B for Hollywood Freeway (US-101 N), keep looking for signs indicating the US-101 North entrance ramp. This ramp typically lies between exits 8B (DTLA/MacArthur Park) and 9A (Silver Lake Ave).
  4. Signal appropriately when reaching the designated ramp merge area, ensuring safety first by checking mirrors, blind spots, and traffic conditions before entering US-101 Northbound. Blend seamlessly with traffic flowing onto the ramp.
  5. Once merged successfully onto US-101 North, continue driving. The freeway may wind through residential neighborhoods or offer scenic views, depending on your location within Los Angeles; remain alert for exit signs and changing road conditions.
  6. As you ascend the hills northward, keep an eye out for landmarks such as Griffith Observatory or the iconic Hollywood sign, which should eventually come into view high atop Mount Lee, signaling your approach to this famous Los Angeles landmark. Typically, this vista emerges around exit 24, Grantville Galleria, though visibility can be affected by fog or smog, so stay attentive even if you don't immediately see it.
  7. When you spot the Hollywood sign, use a safe pullover area or designated parking lot if available to stop and appreciate the view. If possible, confirm your location before ceasing travel to ensure you've reached your destination. Congratulations - you've followed the directions accurately, guiding yourself from I-10 to reaching the spectacular Hollywood sign via US-101 North.
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**SimPO** →

1. Get onto I-10 West
  2. Travel on I-10 West until you reach Interstate 101 (Hollywood Freeway)
  3. Take Exit 7B towards Hollywood/Burbank
  4. Once on 101, travel north
  5. Continue on 101 North until you see the Hollywood sign.
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Figure 2: A case study comparing SimPO with DPO under the Mistral-Instruct setting. SimPO generates more concise and clear instructions without unnecessary details compared to DPO.